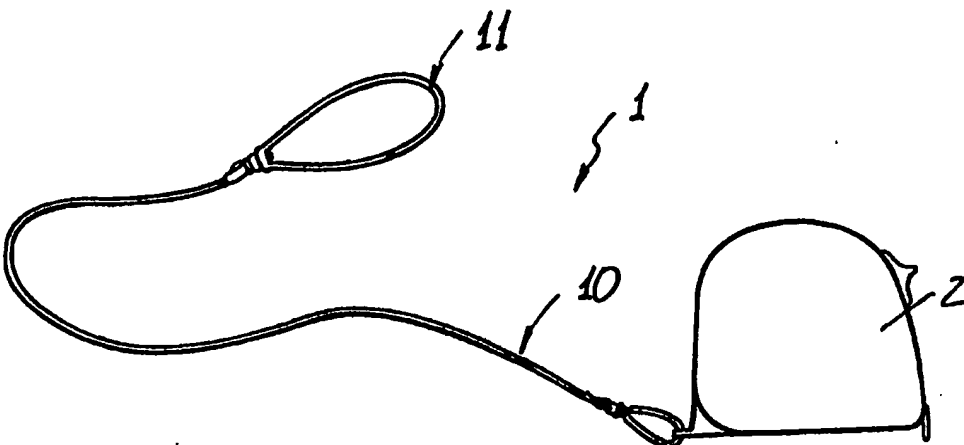


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(21) International Application Number: PCT/IT98/00030 (22) International Filing Date: 18 February 1998 (18.02.98) (30) Priority Data: MI97U000142 27 February 1997 (27.02.97) IT (71) Applicant (for all designated States except US): METRICA S.P.A. [IT/IT]; Viale Vicenza, 40, I-36071 Arzignano (IT). (72) Inventor; and (75) Inventor/Applicant (for US only): DORIGUZZI BOZZO, Mario [IT/IT]; Viale Vicenza, 40, I-36071 Arzignano (IT). (74) Agent: CICO GNA, Franco; Ufficio Internazionale Brevetti Dott. Prof. Franco Cicogna, Via Visconti di Modrone, 14/A, I-20122 Milano (IT).		(81) Designated States: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, GH, HU, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG). Published <i>With international search report.</i>
(54) Title: WITHDRAWABLE GRADUATED TAPE MEASURING INSTRUMENT INCLUDING A SAFETY DEVICE  (57) Abstract <p>The present invention relates to a withdrawable graduated tape measuring instrument including a safety device. The main feature of the invention is that the instrument comprises a variable operating length element having one end thereof associated to a set point of the instrument casing and the other end thereof which can be connected to a garment of the operator using the instrument.</p>		

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**WITHDRAWABLE GRADUATED TAPE MEASURING INSTRUMENT
INCLUDING A SAFETY DEVICE**

BACKGROUND OF THE INVENTION

The present invention relates to a withdrawable graduated tape measuring instrument
5 including a safety device.

As is known, withdrawable graduated tape measures are very simple and generally used measurement or measuring instruments.

These measuring instruments provide a lot of
10 recognized advantages, deriving from their small size and facility of use, together with a very accurately made construction, and they are, accordingly, produced in very large amounts and sold at a very low cost.

Mainly due to the above mentioned advantages,
15 the withdrawable graduated tape measures, owing to the combination of their use facility and their high use reliability, represent indispensable measuring means or instruments for the building construction, industrial production and marketing fields.

20 The technological development of the above mentioned measuring graduated tapes has involved, on one hand, the possibility of making measurements of increasingly larger lengths (for example up to 10 m for the flexible graduated tape measures providing for an
25 automatic recovering of the flexible graduated tape, an up to 100 m for the metrical graduated tape rolls, in which the tape is recovered or withdrawn into its housing by a manual crank) and, on the other hand, it has further involved an improved mechanical performance

such as, for example, a stiffness up to 3 m of the flexible tape, which has been obtained by increasing the width of the tape - (for example up to 25 mm) - as suitably bent or curved..

5 The above mentioned improvements have induced the measure tape makers to make heavier tapes, having a weight of the order of some hundreds of grams, these graduated heavy tapes being held in comparatively small size casings.

10 Considering that the use of a measure graduated tape is, per se, of a discontinuous type, since it is conventionally alternatively used in cooperation with other tools of marking instruments to properly make the made measurements, prior graduated
15 tape measures can accidentally fall or be lost.

Accidental fallings represent a great danger for other operators operating nearby, and, moreover, further represent an economic damage.

20 In this connection it would be sufficient to mention the situation of a building construction place or of an apparatus assembling place having a comparatively great height, to only understand that an accidental fall of a measure tape, having a comparatively high weight, on the head of a underlying
25 person, would constitute a very dangerous safety and health risk, penally sanctioned by severe law provisions and rules.

SUMMARY OF THE INVENTION

30 Accordingly, the aim of the present invention is to solve the above mentioned problems, by providing a withdrawable graduated tape measuring instrument including a safety device preventing the instrument

from accidentally falling.

Within the scope of the above mentioned aim,
a main object of the present invention is to provide
such a measuring instrument including a safety device
5 which does not hinder normal working operations by an
operator.

Another object of the present invention is to
provide such a measuring instrument which can not be
lost and which, moreover, is safely protected against
10 any possible damages.

Yet another object of the present invention
is to provide such a measuring instruments which,
notwithstanding its improved constructional and
operating features, is very simple construction wise
15 and can be made easily and at a very low cost, thereby
allowing the instrument to achieve a broad diffusion in
the professional user field.

According to one aspect of the present
invention, the above mentioned aim and objects, as well
20 as yet other objects, which will become more apparent
hereinafter, are achieved by a withdrawable graduated
tape measuring instrument including a safety device,
said measuring instrument comprising an instrument
casing in which a withdrawable graduated tape is
25 arranged, characterized in that said measuring
instrument comprises moreover a variable operating
length element having one end thereof connected to a
set point of said instrument casing and having the
other end thereof adapted to be coupled to a garment of
30 the operator using said measuring instrument.

BRIEF DESCRIPTION OF THE DRAWINGS

Further characteristics and advantages of the

present invention will become more apparent hereinafter from the following detailed disclosure of a withdrawable graduated tape measuring instrument, including a safety device, according to the present invention, which is illustrated by way of an indicative, but not limitative, example, in the figures of the accompanying drawings, where:

Figure 1 is a schematic view illustrating a possible preferred embodiment of the withdrawable graduated tape measuring instrument according to the present invention;

Figure 2 illustrates a different embodiment of the latching elements including a snap openable hook element of the measuring instrument according to the present invention;

Figure 3 illustrates a latching element comprising a rotary spring-catch element;

Figure 4 illustrates latching elements comprising a coil or spiral ring element;

Figure 5 illustrates latching elements comprising an openable ring element;

Figure 6 illustrates a measuring instrument having a variable operating length element, of a spiral or coil type;

Figure 7 illustrates a garment latching element, comprising a clip or clamping element; and

Figure 8 illustrates a measuring instrument having a variable operating length element coupled to the body of the instrument casing by a ring-like eyelet terminal element, and being locked by a screw or a rivet.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

With reference to the number references of the above mentioned figures, the withdrawable graduated tape measuring instrument, including a safety device, according to the present invention, which has been generally indicated by the reference number 1, comprises an instrument casing 2, having any desired configurations, inside which is provided a withdrawable graduated tape, comprising, for example, a flexible measure or other tape or strip elements.

The main feature of the invention is that a variable operating length resilient element comprising, as shown in Figures 1 to 5, a resilient element 10, made either of a synthetic or natural material, such as a plastic material, or being also made of a steel material and having a spring like configuration is moreover provided.

Said variable operating length element is arranged between the withdrawable tape measuring instrument and a garment of the operator and is connected, by any suitable clamping means, on one side to the casing 2 and, on the other side, to said garment of the operator, for example to the belt of the operator trousers or any other desired part of said garment.

Said resilient element has been specifically designed to restrain or hold the measuring instrument during an accidental fall thereof and it has such a length allowing an arm of the operator to be easily extended as the measurement is carried out and, with the instrument in a rest condition, for example stowed in a pocket of the operator garment, or coupled to his belt, said length should be sufficiently short in order

not to hinder the working movements of the operator.

Moreover, in the case of an accidental falling, then the resilient element will cause said instrument to be resiliently recovered, thereby preventing it from accidentally damaging other persons who would be impacted by a comparatively large mass, thereby said measuring instrument can not be lost or damaged.

In this connection it should be apparent that the latching element can have any desired configurations.

For example, in Figure 1 a latching element comprising a hook element which can be snap opened, said hook element including a spring-catch member 11 coupled to the resilient element 10 and having an openable tongue 12 which can be resiliently depressed, is shown.

If desired, and as is shown in Figure 3, the latching element can also comprise a spring-catch member 13 including a pivot pin 14 in order to allow it to turn to fit the movements of the operator.

The latching element can also comprise a ring element 15, shown in Figure 4, having a spiral or coil configuration, and made of any suitable plastic materials or metal materials, which can be fixedly joined to a set coupling point or region.

Figure 5 shows a latching element comprising a ring element 16, coupled to a threaded sleeve 17 provided for opening said ring element.

As shown in Figures 6 to 8, the variable operating length element can also comprise a spiral or coil wire 20, combining the advantages of a comparatively small rest length and a very high

extension property, without hindering the operating movements of the operator.

As shown in Figure 7, the garment coupling or connecting element can comprise a clip or clamp element
5 21, which can be easily clamped to the operator belt, to a pocket of the operator garment or any other portions of said garment.

As shown in Figure 8, the instrument casing coupling element comprises an eyelet terminal type of
10 element 22 which has a ring-like configuration and is provided for connection to the instrument casing 2 by a screw, rivet or the like.

The measuring instrument latching element can also be simply made by forming a knot on the variable
15 operating length element, the size of said knot being adapted to prevent it from passing through a hole formed through the instrument casing.

It would be also possible to weld the end portion of the variable length element after having
20 caused it to pass through a hole formed through the instrument casing, whereas the latching to the garment can be obtained by one of the above disclosed latching elements.

It is furthermore possible to lock, by a clip
25 or a metal sheath adapted to be closed by clamping, the end portion of the variable operating length element after having caused it to pass through a hole formed through the instrument casing.

It is moreover possible to lock by a adhesive
30 material the end portion of the variable operating length element to the instrument casing.

From the above disclosure it should be apparent that the invention fully achieves the intended

aim and objects.

In particular, it should be apparent that the above disclosed embodiments of the latching elements have been all designed in order to permanently or
5 removably connect the measuring instrument to the operator, without hindering the working operations thereof, while preventing the measuring instrument from being accidentally lost.

In practicing the invention, the used
10 materials, provided that they are compatible to the intended application, as well as the contingent size and shapes, can be any depending on requirements.

CLAIMS

1. A withdrawable graduated tape measuring instrument including a safety device, said measuring instrument comprising an instrument casing in which a withdrawable graduated tape is arranged, characterized in that said measuring instrument comprises moreover a variable operating length element having one end thereof connected to a set point of said instrument casing and having the other end thereof adapted to be coupled to a garment of the operator using said measuring instrument.

2. A withdrawable graduated tape measuring instrument including a safety device, according to the preceding claim, characterized in that said variable operating length element comprises a resilient element.

3. A withdrawable graduated tape measuring instrument including a safety device, according to the preceding claims, characterized in that said variable operating length element comprises a spiral or coil wire.

4. A withdrawable graduated tape measuring instrument including a safety device, according to the preceding claims, characterized in that said measuring instrument comprises moreover, at at least one end of said variable operating length element, a latching element.

5. A withdrawable graduated tape measuring instrument including a safety device, according to the preceding claims, characterized in that said latching element comprises a snap openable hook element.

6. A withdrawable graduated tape measuring instrument including a safety device, according to the preceding claims, characterized in that said latching

element comprises a ring-like element which can be opened by a threaded sleeve element.

5 7. A withdrawable graduated tape measuring instrument including a safety device, according to the preceding claims, characterized in that said latching element comprises a spiral ring element.

8. A withdrawable graduated tape measuring instrument including a safety device, according to the preceding claims, characterized in that said latching
10 element comprises a clip element.

9. A withdrawable graduated tape measuring instrument including a safety device, according to the preceding claims, characterized in that the instrument casing latching or clamping element comprises a wire or
15 yarn knotted on itself after having caused it to pass through a ring element or the like latching point for latching to said instrument casing.

10. A withdrawable graduated tape measuring instrument including a safety device, according to the
20 preceding claims, characterized in that said instrument casing latching or clamping element comprises a wire welded on itself after having caused it to pass through a hole formed through said instrument casing.

11. A withdrawable graduated tape measuring
25 instrument including a safety device, according to the preceding claims, characterized in that said instrument casing latching or clamping element comprises a wire or yarn locked by a screw or rivet or the like or by an adhesive material to said instrument casing.

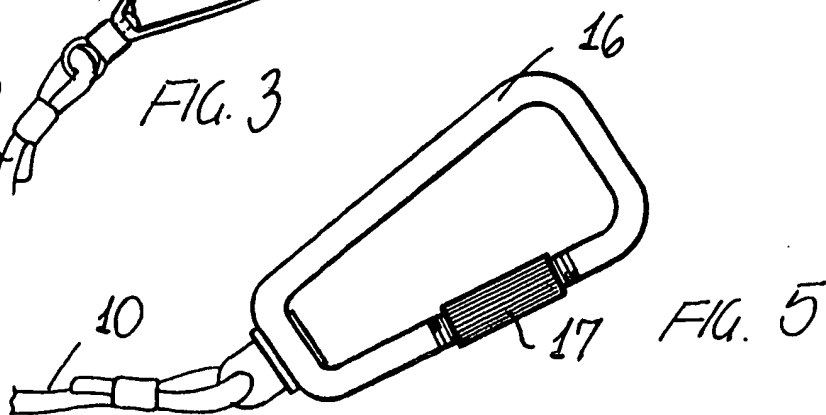
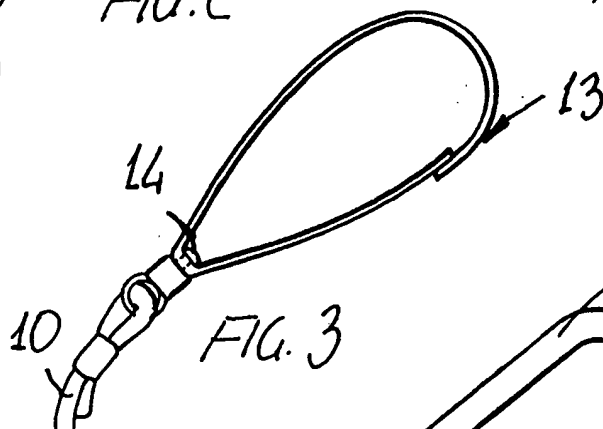
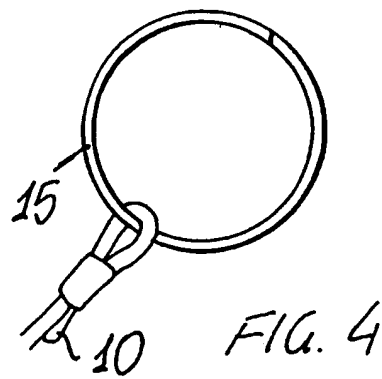
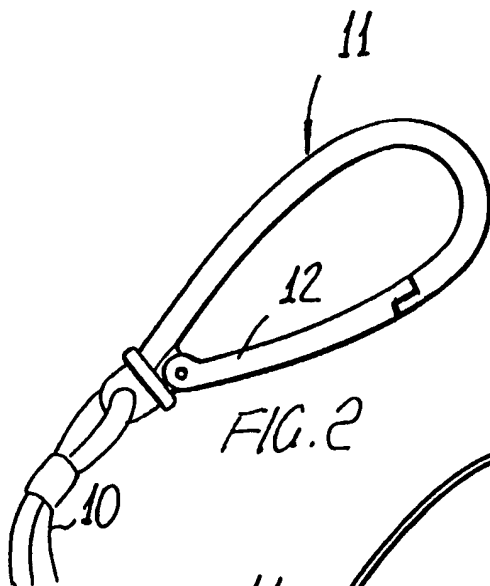
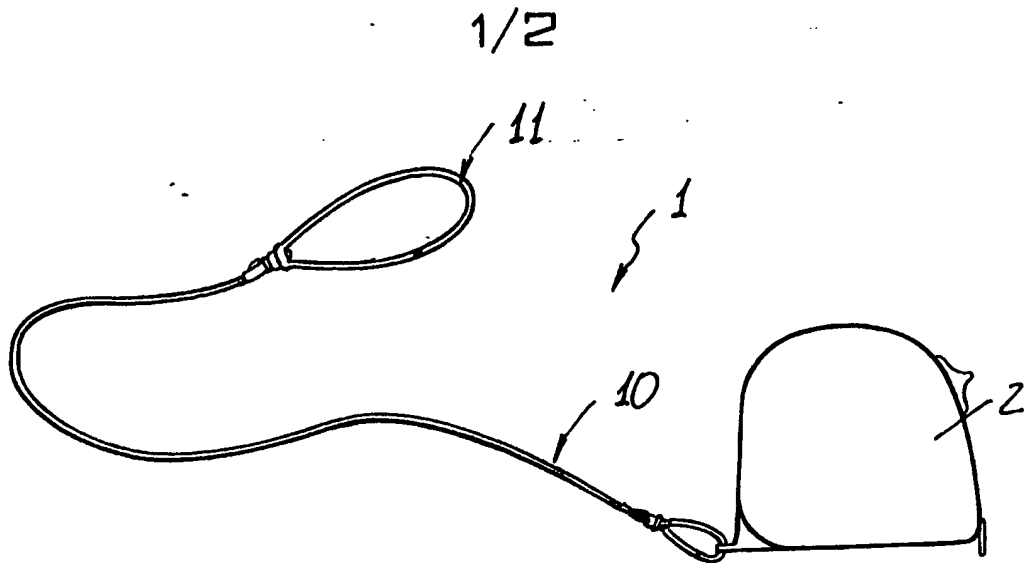
30 12. A withdrawable graduated tape measuring instrument including a safety device, according to the preceding claims, characterized in that the instrument casing latching or clamping element comprises an eyelet

element having a ring-like configuration coupled to said instrument casing by a screw, rivet or the like.

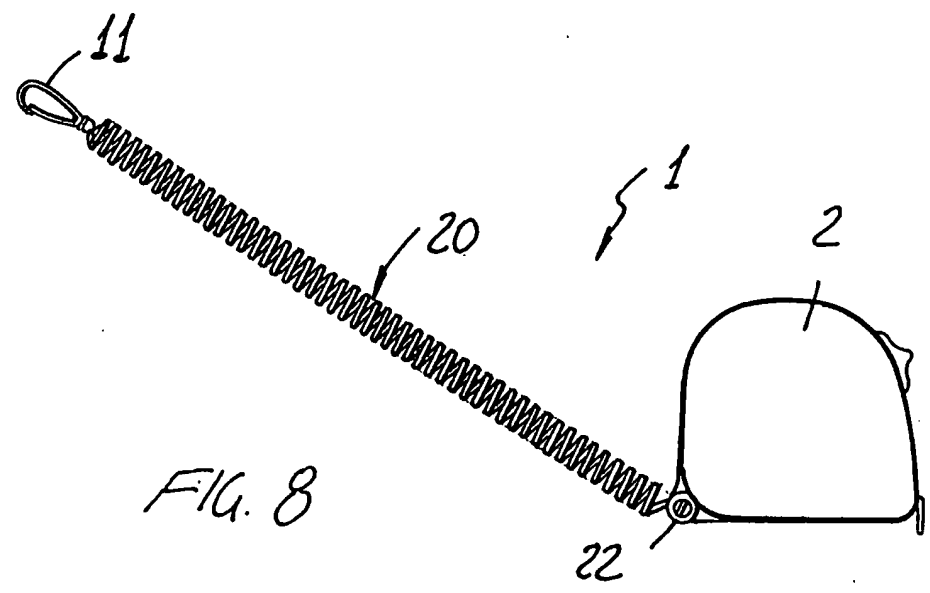
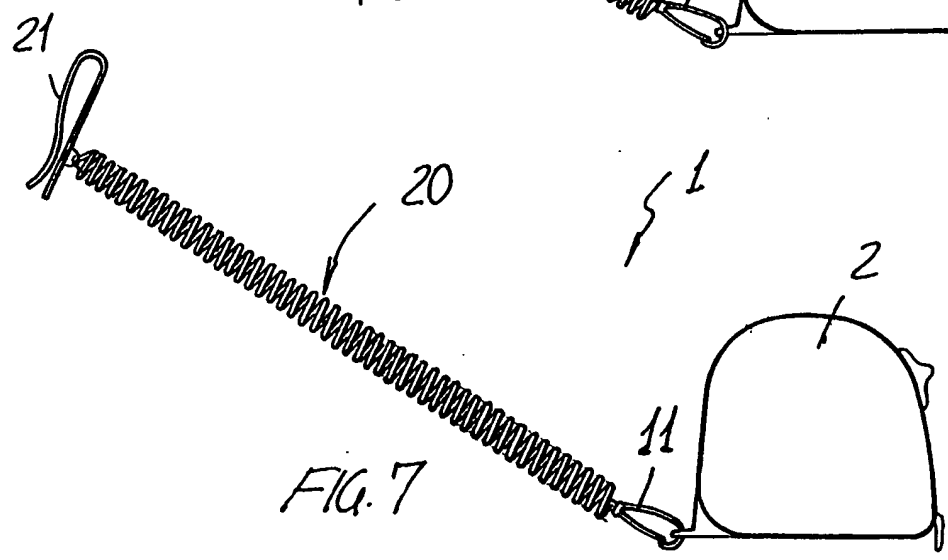
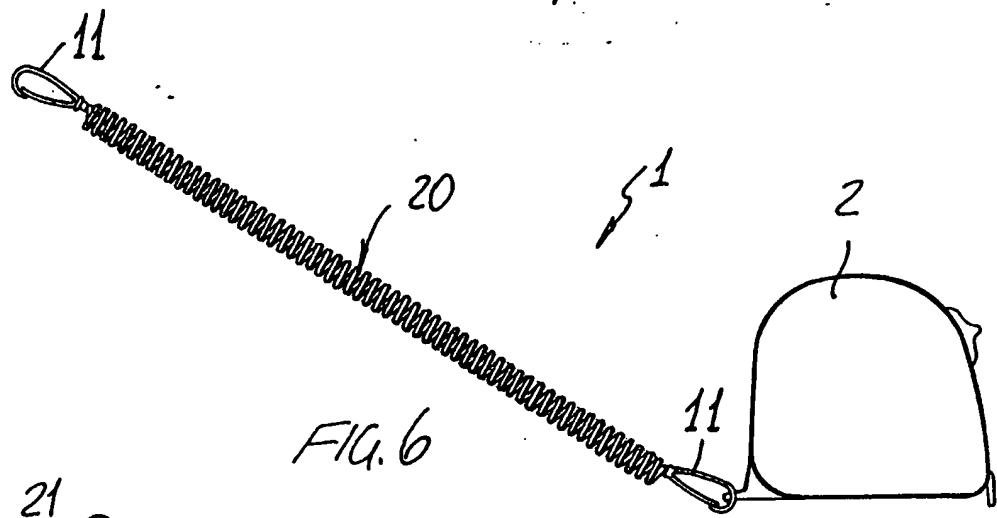
5 13. A withdrawable graduated tape measuring instrument including a safety device, according to the preceding claims, characterized in that said latching or clamping element is rotatably coupled to said variable operating length element.

10 14. A withdrawable graduated tape measuring instrument including a safety device, according to the preceding claims, characterized in that the length of said variable operating length element is so designed as to allow the operator to freely carry out the working operations thereof, while not hindering the operator as said operator uses other tools.

15 15. A withdrawable graduated tape measuring instrument including a safety device, according to the preceding claims, characterized in that said variable operating length element has a small length in a rest condition thereof and being sufficiently soft as it is
20 extended by the operator during a measuring operation.



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INTERNATIONAL SEARCH REPORT

International Application No

PCT/IT 98/00030

A. CLASSIFICATION OF SUBJECT MATTER

IPC 6 G01B3/10

According to International Patent Classification(IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 6 G01B A44B

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	FR 1 389 918 A (YVON HERVAIS) 9 June 1965 see page 1, paragraph 5 - page 1, paragraph 6; figure 1 ---	1, 2, 4, 9, 14
X A	FR 1 246 890 A (ETS. QUENOT & CIE.) 15 February 1961 see page 1, paragraph 8 - page 1, paragraph 9; figures 1, 2 ---	1, 2, 4, 5, 12 14
X A	FR 2 405 461 A (C. ALACHIAN) 4 May 1979 see page 1, line 34 - page 2, line 33; figure 1 --- -/--	1, 2, 9 10, 14

☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

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Date of the actual completion of the international search

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INTERNATIONAL SEARCH REPORT

International Application No

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C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT		
Category	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 4 226 105 A (F.L. WEHRMAN) 7 October 1980 see the whole document; see figures 1-4 ----	1,4,7,8
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INTERNATIONAL SEARCH REPORT

Information on patent family members

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